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OLD STONES.

'NONSENSE! Who on earth would take such a journey'—it was forty miles across country, or sixty odd if you went round by rail—'just to see a heap of old stones!'

So grumbled our host, whose 'bark was waur than his bite,' who always said the unkindest things, and did the kindest. Of course, *we* never fretted ourselves about the matter; we knew we should go.

It had been the dream of youth to us all, indulged hopelessly for—well, I had better not say how many years; since, though to the youngest—now our merry hostess, and mother of our host's three boys—time did not so much matter, we two elders, who had not made quite such good use of it, might possibly be sensitive on the subject. Time? Pshaw! we plucked the old fellow by the beard, and laughed at him, all three of us. He had only made us wiser, and richer, and merrier; we did not grudge him one year out of the many that have slipped away since we used to sit in short frocks, and frilled trousers, and long plaited tails of hair—*à la Chinoise*—in shady arbours, poring over Penny Magazines and juvenile Tours through England—which confirmed us, as I said, in the longing to see Stonehenge, of all places in the world—our 'world' which in wildest dreams extended not beyond the British Islands.

We never had seen it: not though, since then, some of us had gone up and down Europe, till we had come to talk of the Alps and Italy with a hand-in-glove familiarity quite appalling; though to others, the 'ends of the world' had at second-hand been brought so close, that the marvellous Peter Botte Mountain, about which we drank in so many (ahem!) fabulosities in the said Penny Magazine, and Cape Horn, of gloomy horror, and the delicious Coral Islands, on which we so desperately longed to be cast away as youthful Robinson Crusoes, had dwindled into everyday things. Yet still, still we had never seen Stonehenge.

As the idea was started, and we canvassed it over the tea-table, the dream of our girlhood came back with the delicious mystery and ingenious conjectures that attended it, and the wild hope—struck out of the infinite belief of youth in everything, and, above all, in itself—that if we only once got a sight of it, who knew but that we, actually WE! might be the happy individual to set for ever at rest, by some lucky suggestion, the momentous question: Who built Stonehenge?

A 'heap of old stones!' We scouted the phrase with even youthful indignation; we protested that it had been the desire of our lives, that we would any of us cheerfully travel anyhow, anywhen, anywhere to see Stonehenge. Then, like wise women, we let the matter rest; we knew we should go.

Our plan germinated a day or so, in wholesome silence, till we saw its first leaf peering above ground in the shape of a Bradshaw which, quite *par hasard*, our host was apparently studying.

'Oh!' observed he—apropos of nothing. 'It would take a long day—a very long day.'

'What would?' somebody said hypocritically.

'I thought you wanted to see Stonehenge.'

We smothered our joy; we were meek over our triumph; we even—as days were precious to the masculine portion of the household—acquiesced humbly in the proposal that we should 'make a long day of it'—that is to say, from six A.M. to about twelve P.M., including a journey by coach and rail of about 110 miles, if even by that slightly arduous means we might purchase an hour or two among our 'old stones.'

Patience prospered; resignation won. The very next day, we four—three womenkind, on whom, as we have passed the season when we care to be the three Graces, I may as well bestow, *pro tem.*, the names of the three Virtues, Faith, Hope, and Charity—under escort of Hope's husband—found ourselves clattering over the stones of our little town, that within two hours fully informed itself of our excursion and plans in all particulars, many of them quite unknown to ourselves. No matter; we were very happy, even when Fate, according to her custom—a wise one, doubtless—dashed our joys, with a pelting rain, which tore us from post travelling and from the breezy heaths—redolent for miles and miles of the apricot-scented gorse—to thrust us into a railway carriage, where we had our choice of being smothered or soaked.

Still no matter: not though we had to make a *circumbendibus* which would occupy the whole of the afternoon, and land us in Salisbury just time enough to go to bed: not though the delicious drive across country was put an end to, and we were jolted, and choked, hungry, and wet (likewise dry, very!), labouring under every travelling woe, *except* ill-humour. As we laughed, our troubles lightened; and when, towards dusk, we saw, westward, a red streak peering through the dun sky, and birds began to sing out cheerily in the green, dripping trees, we gloried in all our conquered disasters, for we said: 'It is sure to be a fine day to-morrow.'

And when, opening the carriage window, one of us heard, through the stillness of the rainy twilight,

> The faint and frail cathedral chimes
> Speak time in music,

we felt, we knew that we were near Salisbury, that to-morrow we should see Stonehenge.

No chance of the cathedral that night; but we saw above the houses its exquisitely delicate spire; and once again, as we sat over the welcomest of tea-suppers in the inn-parlour, we caught the chimes, 'faint and frail;' and Hope, who used once to be the most romantic of us all, and in whom even matrimony had not quite uprooted that beautiful weed of the soul, took out boldly her pet poem, *The Angel in the House*, and declared her intention of rising at some unearthly hour next morning, to hunt out the dean's house, where it is supposed the 'Angel' abode, previous to being caught and carried away to the author's. She should find it, she knew, in 'Sarum Close:'

> Red brick and ashlar, long and low,
> With dormer and with oriels lit:
> Geranium, lychnis, rose, arrayed
> The windows, all wide open thrown,
> And some one in the study played
> The wedding-march of Mendelssohn.

Gathering all this admirable evidence for identifying—nothing! we laid our plans, took one peep out on the street, where the pavement glittered, shiny with rain, under the gas lamps, and above a queer black gable, out peered the brightest, softest new moon—we all went to bed as merry as children. Out upon old Time! were we not at heart just as young as ever, and going to Stonehenge to-morrow?

And we went. I beg to chronicle this in capitals, as a remarkable corroboration of the proverb, 'Wish for a gown o' gowd, and ye'll aye get a sleeve o't;' and to shew that people do sometimes get what they want, if they have patience to wait for it twenty years or so. We went.

It was an exquisite morning; fresh after the rain, breezy and bright, with clouds scudding now and then over the May sun, threatening us just enough to make us feel that we didn't care. It might rain, and welcome—in an hour or two—but we should be at Stonehenge. Even if we saw it—humiliating position!—from under umbrellas, see it we should and would.

So we dashed along the quiet morning street, where the respectable inhabitants of Sarum were just breakfasting, little recking of insane tourists, wild over their familiar 'old stones.' Even our driver, honest man, as he took us through 'the close and sultry lane'—vide *Angel in the House*, which we again referred to—turned round once or twice, with a patronising air, to answer topographical questions, and then cracked his whip solemnly, as if proud that he wasn't so foolish as some people!

Foolish indeed! but it was a holy intoxication brought on by the fresh, breezy, dewy light, bathing the whole spring-world. How beautiful was that world! with the sky full of larks, and the air of hawthorn-scent, with acres upon acres of champaign land, green with growing wheat, waving and shimmering in the sun—a sea of verdurous plenty. How strange, like a bit of ancient history made visible, looked Old Sarum—a perfect Roman camp, with its regular lines and fosses, now thick-sown with trees, amidst which, for centuries back, we learned, still lurked a house or two—no more.

'Yet that place,' remarked Hope's husband, with severe modern practicality—'that place actually, till the Reform Bill, sent two members to parliament!'

We laughed and pondered how much the world had mended since the times of the Romano-Britons, while we walked in a perpetual chorus of larks—a chorus dropping upon us from the white clouds—who sang over us just as they sang over the heads of those grim warriors when throwing up the green walls of Old Sarum.

Salisbury Plain. Familiar as a proverb the place is. Of a bleak spot, one hears—'As bare as Salisbury Plain;' of being shelterless in the rain—'Might as well have been out on Salisbury Plain.' All images of dreary desolation and flat uniformity gather round it; and one thinks of that celebrated hero of the Religious Tract Society, the 'Shepherd of Salisbury Plain,' with a mixture of sympathy and veneration. Yes, we were now on Salisbury Plain.

A strange place surely. Not flat, as we had expected, but rising and falling in long low waves of land—enclosed wheat-land, for a considerable way; till fences and cultivation cease, and you find yourself in the midst of a vast expanse, lying bare under the sky, as far as eye can reach, in all directions—one undulating sea of intense emerald green. Nothing, except the sea, ever gave me such a sense of solitude, stillness, and desolation, quiet, not painful: nature's desolation is never painful. You hear no birds, for there are no trees to sing in; nay, the larks have ceased, or are heard indistinctly far away over the wheat-fields; an occasional bee alone comes buzzing over the short turf, the flowers of which, dainty, curious, and small, are chiefly of a scentless kind, such as saxifrage, tiny yellow lotos, and primrose-coloured hawkweed. Now or then, every mile or so, you see, lying at anchor in a hollow, or steering across the Plain like a fleet of white sails, whose course you can track for miles, what you know must be a flock of sheep. Or you come upon them close, and the little brown-faced shepherd takes off his cap with a nod and a smile—and his shaggy dog just lifts up his lazy head to look at you: then you leave them all, flock, shepherd, and dog, to a solitude which seems as complete as that of an Arab in the desert, or a ship far out at sea.

And this is Salisbury Plain; and in its centre lies that extraordinary circle of stones, about which, let antiquaries prate as they will, nobody really knows anything whatever.

As we ascended and descended ridge after ridge of the waves of land, we all stretched anxious eyes, east, west, north, and south. Who would be the first to catch sight of Stonehenge? We scorned to inquire of the driver where to look; we felt sure we should recognise it at once; but on we went, and ever so many imaginary 'old stones' did our satirical escort point out to our eager notice as the veritable Stonehenge.

At last he said, with a quiet air of unquestionable superiority, 'That's it: there are your old stones.'

'Where?'—'Oh, please, where?'—'Yes, where?' cried in different and yet concurring tones, Hope, Faith, and Charity—the latter being mild even in her enthusiasm: she had seen Mont Blanc and a few other trifles.

'There!'

'Oh!'—'Ah!'—'Well!'

I grieve to confess that these ejaculations were—not enthusiastic! Did ever the thing attained seem, in the moment of winning, half so grand as when unattained, possibly unattainable? Nay, as our poetical friend observes—not *too* politely—of his 'Angel' (the book's corner peered still out of Hope's pocket):

> The whole world's wealthiest and its best
> So fiercely followed, seemed, when found,
> Poor in its need to be possessed,
> Poor from its very want of bound.

Alas! whether from the vastness of the Plain, which made the gigantic stones seem small, from the want of something to compare them with; or whether youthful imagination had, like 'vaulting ambition, o'erleaped its selle,' and fell prone by the side of ordinary and possible fact—certain it is that nothing but the shame and dread of being crowed over by the superior masculine wisdom, prevented our confessing ourselves disappointed in the first sight of Stonehenge.

But afterwards, as often happens, and, let us hope, happened with our poet and his 'Angel,' coming nearer, its grandeur and beauty grew upon us, till, by the time our horses stopped, and drew up under the large shadow of one of the 'Druid (?) rocks,' we descended, silenced by their exceeding sublimity.

It has been described scores of times, this extraordinary circle, or rather series of circles one within another, varying in size, from the outer stones, which are all of silicious sandstone, apparently about fifteen feet in height, and six or seven in diameter—to the inner ones, of granite, and not beyond the size of a man—and the two great centre trilithons, which still stand, erect and uninjured, over the large flat stone of blue lias, which is supposed to have been the sacrificial altar.

These minutiæ we neither observed nor heeded then. With an involuntary quietness, unbroken even by the sunshiny wind, rough enough to make hats weigh heavy on our minds and only too light on our craniums, and sharp enough to cause a glad recollection of lunch in a basket—in spite of these human weaknesses, we all felt a certain awe on entering the 'ancient solitary reign' of these great gray stones, upright or prostrate, the mystery of which will probably never be revealed till the judgment-day. We felt rather ashamed to run in and out among them, and measure our height with them—puny mortals as we looked, the tallest of us!—and take hands to clamber over the great fallen blocks, and try to find out which was the identical spot upon which, year after year, the human victim must have lain, taking his last open-eyed fill of the wide emerald plain and blue remorseless sky.

So would romance have dreamed; but Practicality, here predominant, soon set themselves—let me say *himself*—to calculate the height and weight of the 'old stones,' and to invent a plan, by means of levers and earthworks, whereby, without any other machinery, even ancient Britons might have erected the trilithons and the outer circle, in the uprights of which he soon discovered circular tenons, fitting exactly into the mortices carved in the top stones, to prevent their sliding off.

'Clever fellows!' he observed, with the satisfied patronage of modern science. 'Yes, those Druids were very clever fellows indeed.'

I hope their ghosts were gratified, if any still lingered in the familiar temple, supposing it ever was a temple, or that the Druids ever built it at all—all which questions, and many more, we discussed over sandwiches and sherry, incensed by faint wreaths of odour from a weed which modern Britain worships as ancient Briton did the misletoe, and, *en passant*, under colour of which, probably effects quite as many human sacrifices. Here, though, it was harmless enough; harmless, too, were the jokes and laughter that broke the utter dead solitude of the place, until we dispersed to gather, for ourselves or other folk, moss, bits of broken stone, and dainty wee flowers that perked up their innocent faces under the very shadow of the immemorial stones. Harmless and pretty too was the determined pertinacity with which Hope, bringing out her eternal book, caught Practicality's coat-sleeve, and insisted on reading aloud the idyl *Sarum Plain*, which endeth thus appropriately:

> By the great stones we chose our ground
> For shade; and there, in converse sweet,
> Took luncheon. On a little mound
> Sat the three ladies; at their feet
> I sat, and smelt the heathy smell——

('There's no heath hereabouts—all turf,' observed Practicality.)

> Plucked harebells——

('Nor harebells either. But then it might have been autumn-time,' mildly remarked Charity.)

> Plucked harebells, turned the telescope
> To the country round. My life went well,
> That hour, without the wheels of Hope;
> And I despised the Druid rocks
> That scowled their chill gloom from above,
> Like churls whose stolid wisdom mocks
> The lightness of immortal love.

Immortal love! Yes, in this place, this dumb oracle of a forgotten world—this broken, dis-hallowed temple raised by unknown worshippers to a lost god—one felt the need of something immortal, something immutable, something which in one little word expresses the best thing of all good things, human and divine, and which in itself belongs to both; and I think in heart or eyes, visible or invisible, we all had it, and rejoiced in it there.

And now we were going, leaving a small token of affection in the shape of a paper of biscuits, and a neckless, though not quite wineless bottle, to two of the aborigines, who had appeared from nowhere in particular, to meekly maunder about the stones, and offer us specimens, but who retired abashed before we could get out of them a syllable of conversation. But just ere departing, we saw, half a mile off, winding slowly across the Plain towards us, a mysterious machine, half-wheelbarrow half-peepshow, with a man behind it—at least a big hat, which indicated a man underneath.

My good man—when you stopped, and in that business-like way, took out your sketch-book, plans, curiosities, and laid them out in a sheltered nook, and began to lecture, in the most intelligent fashion I ever heard from any cicerone, on the antiquities of Stonehenge—you little suspected that one of those three innocent-looking ladies would ever put you down in print! Not that I think you'll have the slightest objection to it, Mr Joseph Browne of Amesbury—'twenty-four years attending illustrator of Stonehenge,' as your guide-book says (price one shilling, and worth two, for its extraordinary amount of intelligent fact and even more intelligent fiction). You are a great character, and long may you live to startle tourists with your apparition, and enlighten them with your discourse—a condensed edition of your guide-book, or rather, your father's. *Literatim*—behold its title!—

THE UNPREJUDICED, AUTHENTIC, AND HIGHLY-INTERESTING
ACCOUNT
WHICH THAT
STUPENDOUS AND BEAUTIFUL EDIFICE
STONEHENGE
IN WILTSHIRE,
IS FOUND TO GIVE OF ITSELF.

Therein is proved, to the author's satisfaction at least, the undoubted origin of Stonehenge. How it was the work of neither Romans, Celts, Druids, nor Phœnicians, but of antediluvians! How though, as the writer allows, 'the difficulty in determining the situation of the abodes of those antediluvians who were concerned in the erection of the Serpent and Temple at Abury, of Silbury Hill and of Stonehenge, is very considerable,' he brings a mass of evidence, wanting in nothing but a few slight premises to start from, and proves that the giants that were before the Flood could alone have erected the stones, and the Flood only could have thrown them down. Of these antediluvians, their manners and customs, and general goings on, domestic, social, and religious—'of the earnest desire that existed in Adam to perpetuate a knowledge of original sin,' which he did, in all probability, by the erection of a great serpentine temple—qy. at Abury?—'that hieroglyphic being fully adequate to so momentous an end'—likewise of the

Deluge, and the course of its waters, 'running as they are known to have done, from the south-west to the north-east'—our author speaks with a decision, confidence, and familiarity quite enviable.

Nevertheless, despite one's smile at the ease with which 'facts' can be accumulated into a great cairn of evidence over the merest dead dust of a theory, which a breath would blow away, one cannot help appreciating the exceeding intelligence and antiquarian ingenuity of both Henry Browne, senior, and Joseph Browne, junior; and all visitors to Stonehenge will miss a great treat if they do not invest a shilling in the guide-book, and one or two more in the acute explanations of the guide.

We did so; left him beaming with satisfaction, and bowing till the big hat nearly touched his knees—in manners, at least, our friend might have taken lessons from his favourite antediluvians—then we rolled slowly over the smooth soft turf, often looking behind till the great gray circle lessened and lessened, and finally dropped behind one of the green ridges.

'You can't see it any more.'

'I wonder if we ever shall see it any more.'

Charity 'was afraid not;' Hope thought 'she should like to bring her boys here, when they were old enough to understand it;' Faith—did what Faith always does, and let the question bide. One thing, however, was certain, that we should, in all human probability, never be all here again as now. In mortal life are renewals, but no repetitions—no 'second' times. Each pleasure, as well as each pain, stands by itself; and though the new thing may be ten times better than the old, still, it cannot be the very thing—*that* is gone for ever, as it is right it should go.

We knew well—and in spite of our laughter, I think we felt—that though we might all live to be old men and old women, and see many grand sights up and down the world, we should never again have a day exactly like this our day at Stonehenge.

'Well, do you want to see any more "old stones?"'

Of course we did. We had not dragged our benevolent Practicality all that distance from his home and work to let him off with anything short of the utmost we could get. Besides, some of us, rising early, had already given glowing descriptions of what, not having seen, I shall not attempt to paint—Salisbury Cathedral and Close, under the aspect of seven A.M. and a sunshiny morning. And some others of us had, from the first dawning of the plan, set our heart with a silent pertinacity which is not often beaten in anything, on seeing all that could be seen and told about the said cathedral. So, after a few carnal but not unnecessary arrangements at the inn with reference to lamb and asparagus, we sallied forth again into Sarum Street—a quaint pretty old town it is!—and passed under the heavy gateway which shuts out from the world the quiet sanctities of Sarum Close. We

> Breathed the sunny wind that rose
> And blew the shadows o'er the spire,
> And tossed the lilac's scented plumes,
> And swayed the chestnut's thousand cones,
> And filled our nostrils with perfumes,
> And shaped the clouds in waifs and zones,
> And wafted down the serious strain
> Of Sarum bells——

Not exactly yet, as it was before service-time. Otherwise the picture was just as we beheld it that 26th of May 1857.

Of all English cathedrals, perhaps Salisbury most merits the term 'beautiful.' Its exquisite lightness, whiteness, and airy grace, set in the midst of a wide and open Close, sometime turf, but now one golden ocean of wavy buttercups, and belted in by a square walk, where chestnut and lime trees of thickest, vividest foliage overhung the path, and half-shadowed the old houses and small bright gardens—its glittering windows and flying buttresses, up from which one's gaze wandered to the most delicate of spires, that tapered up till it vanished into nothing in the broad blue—I feel it is impossible to describe—I can only shut my eyes and dream of—this first vision of Salisbury Cathedral.

We sauntered slowly along the path through the buttercups; how much better than a field of tombstones, as it was for centuries, till bold Bishop Barrington on one momentous night sent an army of workmen, who before daylight had levelled the whole, laid each tombstone carefully over its proper grave; only—four feet below the surface, instead of upon it! How the good people of Salisbury must have stared, and stormed, and been scandalised; but the deed was done, and could not be undone; the turf grew green, the dead slept quietly and unharmed, and ceased to be, what providence never meant them to be, though man has tried hard to make them—a burden, a terror, or a destruction to generations of the living. Now, there are no more burials in Salisbury Close, and very few even in the cloisters.

Passing through the nave to the chapter-house, we entered these cloisters. Others, elsewhere, are grander—Gloucester, for instance—but here, again, I doubt whether any can compete with Salisbury in beauty. This covered cloister-walk encircles a space open to the sky, with, I think, only two yew-trees planted in it. The verger told us that the late bishop took great pride in it; and after his wife was buried there, would not allow even a daisy to mar the exquisite green of the turf, but paid old women to go and pick them every morning! His three family tomb-stones are the only tombs allowed: over all the other graves are tiny tablets, let into the level grass; and so narrow is the space, that each grave is dug coffin-shaped. We could trace still, in one or two places, the known outline which, however familiar, humanity never looks upon without a certain awe.

We entered the chapter-house, which—better than any monumental tomb—is being restored, by subscription, to this late bishop's memory. Here, again, the exquisite airiness of Salisbury architecture struck us. This great lofty circular chamber—chapel almost—is entirely supported by one centre pillar, or rather cluster of united pillars, from which all the arches spring. You stand under it as under some slender palm-tree, and look up wondering at its aërial lightness, its ineffable grace. Nor, even when overpowered by the extreme ornamentation of the 'restored' building (one of us suggesting that the restorer had better have left it alone, was quite annihilated by the verger's—'Indeed!—you think so, madam!'), does this sense of that unity and simplicity which constitute a perfect form of beauty, ever pass away.

'Rather different from Stonehenge. Quite a variety in old stones,' observed our escort, after examining and recognising the Purbeck marble and pavement of Minton's tiles—admirable modern imitations of the antique.

Yes—it could not fail to set us pondering how

> The One remains—the many change and pass.

The ONE, whom Shelley knew not, or knew so dimly; whom, ignorantly and blindly, all earthly generations have, in divers manner, striven to adore; in all manner of temples—from these rude stones of Stonehenge, so placed that the sun, rising in his place upon the longest day—and *only then*—shall strike through the gateway, on to the sacrificial stone—to this fair cathedral, on which the devices of man's brain and hand, through six hundred years, have been lavished, to glorify in material shape the Immaterial, whose glory the whole earth and heavens cannot contain.

We trod lightly, as instinctively one treads on what must ever be regarded as consecrated ground. We heard the many traditions of the place—saw the usual cross-legged, broken-nosed Crusaders; the boy-bishop who, in the midst of his murmurings, ate himself to death—poor little rogue! was buried with all canonical honours, and whose tiny effigy may be seen to this day; the skeleton-monk—who still lives in stone, to impress beholders with a wholesome terror of mortality and corruption. With these wonders, and a score more, we regaled our curiosity; till a few figures, quaint and quiet, such as one always notices in cathedral towns, entered a little door, and stole, prayer-book in hand, along the nave, towards the choir—while over our heads—far up, as it were—the service-bell began to toll dreamily and slow.

We had no time to stay longer; so, out into the open air! through the door at the great west front, which we turned back to look at; and, though quite unlearned in church architecture, stood marvelling at its rich decorative work, endlessly varied, over which a little bold happy sparrow ran up and down and in or out, as if the whole of Salisbury Cathedral were made for him to build his nest in. Thence, slowly round the Close, in one corner of which a group of boys were just quitting a game of most unsanctified cricket, and disappearing hastily either for school or prayers; out through the gateway, leaving the bell still ringing, and the clouds still floating over the airy spire—the May winds still rustling the chestnut trees, and waving the buttercups, and the sunshine glorifying into almost unimaginable whiteness and beauty Salisbury Cathedral.

Finally, home; in the cool of the day, travelling right across country, a country purely English; skirting parks, where the trees stood, one by one, majestic pyramids of green, with their branches sweeping the very ground; past rich fields, dotted with red and white cows, ruminating in the grass, or standing knee-deep in a pond, too lazy to do more than turn to us the mild, calm, sleepy gaze, whence Homer calls Juno 'the ox-eyed;' through quiet villages, where children and old women gaped at us out of open doors, where every cottage had a porch, and every porch was a mass of woodbine or China roses. A drive not easily to be forgotten, in the lovely pictures it gave of one's own country—one's modern, everyday living and breathing England, which, with all her faults, we fondly believe to be

Beloved of heaven o'er all the world beside.

Finally, as I said, home; to find the children fast asleep; and sit for an hour or so over a quiet fireside, talking over all our doings, which will serve for talk still, when we are all gray-headed, and the 'little ones'—probably six feet high—may be taken—I beg pardon, may take themselves—to see Stonehenge.

'Well, have you, on the whole, enjoyed your "Old Stones?"'

I should rather think we had!

KIRKE WEBBE,

THE PRIVATEER CAPTAIN.

CHAPTER IV.

To speak, to think of dinner at such a moment was revolting, insufferable! The callous animalism of the privateer captain annoyed, disgusted me, and I flung out of the house in a hot rage. The wind, I found, had increased to a gale—the ships at Spithead had sent down their upper spars, in preparation for a dirty night; and so piercing was the blast, that it took the wine-fire out of my blood in a very short time, and I was enabled to take a cool dispassionate view of Captain Webbe's assumedly frank, confidential, straightforward communication; the result being to deepen, rather than efface, the feeling of mistrust with which I had listened to it.

I do not know that I could have given any very logical or lucid reason for that mistrust; but I had, notwithstanding, a strong impression that he was seeking to hoodwink, bamboozle me, and to carry out a purpose widely different from the ostensible one. Yet, except that he imagined it possible to palm off a daughter of Madame de Bonneville for the lost Lucy Hamblin—an altogether wild, insane project, of which it was really absurd to suspect so cool-headed a man—I could not see what sinister purpose he could have in view.

Then my mother, who had known him so many years, confided in his good faith, if with some misgivings, and commanded me to do the same. It was imperative, consequently, that I should not suffer myself to be discouraged by shadowy dangers, having no existence, possibly, save in my own imagination. Concluding, therefore, to place heedful confidence, so to speak, in the privateer captain—to follow his leading boldly, and with both eyes wide open—I returned to the hotel.

Captain Webbe had finished his dinner, proclaimed by his rosy gills and generally placid aspect to have been a satisfactory one. I apologised for having so abruptly left him.

'My dear boy, the loss was yours, not mine,' replied Mr Webbe. 'Besides, it is a common failing in the morning of life, when the blandishments of passion take the reason prisoner—— I forget the exact words of the quotation, but the practical moral is, that inexperienced youth is prone to attach a higher value to imaginary raptures than to the sober reality of a southdown wether-leg, done to a bubble—a weakness which the strong years never fail to cure. A glass of wine with you, Master Linwood.'

'Willingly; and now, perhaps, you will have the goodness to sketch, and with as rapid a pencil as possible, the action of the all-important, all-compensating last act you speak of?'

'Certainly. Madame de Bonneville, *ci-devant* Louise Féron, exclaimed upon catching sight of me—she has about the sharpest pair of eyes I know of: "Le Capitaine Webbe! Est-il possible!" Now, Captain Webbe, whether in French or English, is not a name to be ashamed of, but there is a time and place for all things—even for picking up stones, as I learned at school—and certainly the month of November 1813, and the street Dupetit Thouars, St Malo, were *not* the suitable time and place for so shrill a proclamation of that respectable name. Instantly, therefore, entreating silence and a word in private, I followed her into the *magasin*. A few minutes sufficed to establish mutually amicable relations; and circumstances detaining me in St Malo longer than I feared might prove beneficial to my health, we became mighty intimate.

'As a proof of that friendly intimacy,' continued Captain Webbe with a grimace, as if half-a-dozen invisible surgeon-dentists were operating upon him at once, 'I may mention that Madame de Bonneville, not having quite sufficient capital for her business, declared that she preferred being obliged for the trifle required—five thousand francs only—two hundred pounds sterling—to her old friend, Captain Webbe, than to her nearest and dearest relatives! It was withal a mere bagatelle, as she said; for which bagatelle, counted out in solid five-franc pieces, le Capitaine Webbe received in acknowledgment and acquittal: "O that you are good! O that you are generous, my dear captain!" and a laugh,' added Webbe with a savage snap of his teeth that would have taken a piece out of a pewter-pot—'a laugh which said as plainly as laugh could,

"You will take skinning more pleasantly, my dear friend, when you are more used to it!"'

Unquestionably genuine was the wrath which flashed from under the scowling brows of the privateer captain, and hissed in a concluding execration! He could not, then, be plotting *with* the Frenchwoman!

'It was subsequent to the exaction of that pledge of amity that I first saw Clémence de Bonneville, and detected the imposture at a glance.'

'Or imagined you did!'

'To the devil with imagined! The pretended daughter has a clear fair skin, bright silken hair, sweet blue eyes, and a delicately moulded, sylph-like figure. De Bonneville's complexion is the colour of mahogany—her hair, raven-jet, and coarse as horse-tails; her eyes, black as a thunder-cloud; her person, large, bony, angular! The girl is an English girl—is the lost Lucy Hamblin. That conviction, fire would not burn out of me.'

'I trust there are better proofs of that than contrasts in features and complexion.'

'There are abundance of proofs, and I rely upon you to obtain them. Now, don't fly out till you have heard all. Clémence, as we may as well continue to call her, is, please to understand, one of the simplest-hearted, most guileless of maidens; and expressions which have escaped her, when I have by a rare chance found her alone, satisfy me that she has in some way discovered, if not the exact secret of her birth, that she is not the daughter of Madame de Bonneville, of whom she stands in terrible awe; and who, by the way, intends marrying her to one Jacques Sicard, a relative of madame's, and a well-enough-to-do master-bootmaker.

'That marriage,' continued Webbe, finding I made no remark, 'still remains in madame's programme, which in other respects has been lately entirely changed. It was, and not so very long ago, her intention, after Clémence had become Madame Sicard—not before—to open negotiations with Mrs Waller, who, she is aware, cherishes the memory of her lost child as tenderly as ever.'

'Nothing more than proof of Clémence being that lost child—unchallengeable, overwhelming proof, is required for my father's effectual vindication.'

'Quite true; and the knowledge of that has, no doubt, powerfully operated in finally determining Féron—she has no legal right, I am positive, to the name of De Bonneville, and Féron she shall be to me—in finally determining Féron, I say, never to take a step that might lead to such a result. Cupidity might, however, have conquered hate; but a closer view of the possible consequences to herself that might follow the avowal that Clémence was the child alleged to have been drowned, has irrevocably decided her never to make that avowal.'

'Really, Captain Webbe, I can scarcely follow such a labyrinthine maze of strange facts and stranger inferences. What frightful hazard would the woman incur by the restoration of Mrs Waller's child?'

'The hazard of being sent to the galleys—that's all. Féron must have falsified the municipal register of baptism, to which offence the *code pénal* attaches that tremendous penalty. What surety would she have, now that peace is about to open France to the English, that Linwood, for example, might not set the law in motion against her? Then the woman has acquired a respectable position in St Malo, and has a decided objection to losing caste, and much more beside, as she would do, were she to acknowledge that her pretended daughter is a child stolen from English parents. That she will never do: the question is decided.'

'What, then, will she do—does she propose doing?'

'I will tell you in a few words. She has ascertained for herself that the Wallers are still wealthy, that Mr Waller is extremely anxious that his daughter should return to England, and reside near him; that Mrs Linwood is rich, and pines to embrace her son; that that son himself is consumed with an irrepressible longing to return to his native country—to slowly die there, as he in his morbid despondency of mind believes. Well, Louise Féron, if paid very—very handsomely for doing so, will continue to withhold the evidence that would, as she declares, convict your father; Mr Waller can have his daughter to reside near him; Mrs Linwood may again embrace her son; and that son may return to die slowly in his native country—favours to be enjoyed by Louise Féron's sufferance—and revocable, of course, at her pleasure!'

'And how is this woman-fiend to be encountered—baffled?'

'By the exercise of courage and cunning equal to her own,' replied Webbe, throwing away his cigar, and continuing to speak with an energy and earnestness very unlike his usual sneering cynicism; but whether feigned or genuine, I was too little versed in the science of dissimulation to determine.

'The great point is,' said Webbe, 'to make sure that my surmise—we will call it a surmise—relative to Clémence is well founded—to ascertain beyond dispute that she is indeed Lucy Hamblin.'

'That will determine everything.'

'Unquestionably; and fortunately the lost child has, I am pretty sure, some indelible natural mark, which will render its identity indisputable. Your grandmother will tell you what that mark is—I do not wish to know it—and when you have been furnished by me with an opportunity of applying that infallible test, and you are satisfied that Lucy Hamblin is Lucy Hamblin, we shall be free to take such steps as prudence, courageous prudence may advise. If we are foiled, it will be your fault, not mine, depend upon it.'

'How will it be my fault?'

'Madame de Bon—— Louise Féron, I mean, intends leaving St Malo immediately after she can manage to get there from Guernsey; and will be absent on business affairs in Paris for at least three weeks. Clémence will be left to the guardianship of Fanchette, a sort of half-servant, half-friend, and wholly corruptible, yet kindly, gossiping old soul. Now, the *Scout* will be in the Thames at the latest, I hope I may say, on Wednesday evening next; you will embark in her for Jersey, whence you and I will easily pass over to St Malo.'

'Pass over to St Malo! Really, that is a very startling proposition. Suppose, now, my companion and guide, Captain Webbe, of the *Scout* privateer, should be recognised by some person or persons, whom two hundred pounds sterling, counted out in solid five-franc pieces would not bribe to silence—how then?'

'That danger must be risked—confronted. Your mother expressed great confidence in her son's courage.'

'I hope to justify that confidence; and it is surely no proof of courage to shut one's eyes to danger! But go on with your plan.'

'Arrived at St Malo, where, for various reasons, my own stay will be brief, I shall introduce you to Clémence and Fanchette with a flourish of trumpets that will insure a gracious reception. Thenceforth all will depend upon the use you make of your opportunities. To avoid the possibility of being duped, which would not suit my book any more than yours, I would simply ask Fanchette if she knows of any natural mark upon the young lady's person, and if she does, to describe it. Supposing, however, that I am mistaken, and that no such natural mark exists, there is another mode of at least achieving *our* purpose—the vindication of your father's character. There can, I think, be no question that Louise Féron, with a view

to all probable and possible eventualities, took care to preserve some of the child's clothes or ornaments: a pearl necklace I remember hearing the little Lucy had on when she went out on the 18th of August with her traitorous governess; now, if you can manage by bribery, or by any other expedient, to obtain possession of any article we can prove belonged to the child, Louise Féron's hour will have struck, and I shall take care she knows that "ce cher Capitaine Webbe, who will take skinning more pleasantly when he is more used to it," set the hands, and swung the clapper! You will have means of direct communication with me,' added Mr Webbe; 'and when matters are ripe, I will manage to bring you both safely to England.'

'How is it, Captain Webbe, I suddenly exclaimed, 'that you have not given your own son the chance of wooing and winning the guileless and susceptible Clémence? The value of the prize, in only a monetary sense, supposing her to be, provably, Lucy Hamblin, would have been great.'

The privateer captain laughed out with gleeful good-humour.

'That, my shrewd young friend, was the game I *did* intend to play, and bitterly vexed was I at being thwarted in it. My precious soft-headed son had, I found, fallen extemporaneously in love with the pretty face of a penniless wench, one Maria Wilson, or Bilson, whom he had met with in Jersey; and it was quite useless to attempt, I found, stirring such a dish of skimmed-milk with so gallant a purpose! You will have an opportunity of making his acquaintance, as he will go with you as far as Jersey. We will now be going,' added Captain Webbe, ringing the bell; 'I shall be early to-morrow at Oak Villa: night brings counsel; and I will not doubt that I shall find you thoroughly resolved to engage in the task confided to your filial piety and courage. Good-bye.'

I found my excellent relative quite recovered from the nervous shock occasioned by the unexpected apparition of Louise Féron. She had read my mother's letter, and she listened with flashing eyes and glowing cheeks to the recapitulation of my long conferences with Captain Webbe.

Her eager, minute cross-examination, if I may call it so, having at length obtained from me every word he uttered, every peculiar gesture or intonation I could recall to mind, she thus oracularly delivered herself:

'You must not hold back, William, from the venture, very hazardous and slightly promising as it may be. But I have no confidence in Webbe—and do you have none—or at least only so much as deeds, unequivocal deeds, will justify. I always suspected him of being a confederate of Louise Féron's—perhaps unjustly; or they may have quarrelled. I have seen his son—a mild, limpid lad; a masculine type, as far only as person goes, of his meek-minded mother, and the very opposite, consequently, of Kirke Webbe. Lucy Hamblin *had* an indelible natural mark, which will render the fraudulent substitution of another child impossible. But I don't know what it is; and Mrs Waller, whose mind has never quite recovered its once healthy tone, must not be excited by Webbe's strange story, till some proof of its authenticity has been furnished. Obtaining by hook or crook a sight, and if a sight, possession of the pearl necklace, or some recognisable article of clothing, is a good idea; keep your eye upon that. As to your engaging yourself in marriage, why, I dare say, William, the notion of marriage had never—but of course it had not at twenty—occurred to you before. The notion, I say, of such a thing, till the young woman is introduced to you by Mrs Waller herself, as her undoubted daughter, is absurd, quite preposterous; it throws an air of unreality over the whole thing. Still, I do not pronounce against the truth of Webbe's story, because it is in parts absurd, confused, improbable. All true, but incomplete narratives are necessarily so, from the absence of modifying facts and connecting-links. Fiction, on the contrary, is always coherent, plausible. Yes, my dear boy, you must act according to circumstances, with boldness and discretion; above all, with discretion. I do not mean by discretion, timidity or hesitation. You must boldly grasp the nettle danger, it has been wisely said, if you would pluck therefrom the flower safety. True; but you must also be wary and circumspect in deciding upon the fitting time and mode of making that bold grasp. It is a heavy burden, a fearful responsibility to lay upon one so young, so inexperienced in the ways of men; still, it must be. You have courage, zeal, a holy cause, and are not, I think, deficient, for your years, in common sense. I will see Webbe in the morning, and arrange that you shall have frequent communication with me. I shall also add considerably to the reward which your mother has answered for, in the event of success. Such a man can only be bound to our interest by golden fetters, of which there must be no stint.'

After the foregoing fashion did my worthy grandame untiringly discourse or soliloquise, till, becoming aware that I was nodding indiscriminate assent to her dicta, she, with some petulance, exclaimed that it was time for boys to be in bed, and sharply ringing the bell, desired Nancy to bring Master William's chamber candlestick!

I was 'Master William' with the venerable lady, I may here pause a moment to remark, when she, having passed her ninety-fourth year, fell calmly asleep in the arms of her already gray-haired grandson, on the evening of the 10th of July 1840, faintly ejaculating, whilst a seraphic smile played about her thin white lips: 'The clock must be wrong, Master William, for, see, the dawn is breaking—bright—beautiful—divine!'

But more than a quarter of a century of life lay between her and that supreme hour when, on the Wednesday following her Sunday-morning encounter with Louise Féron, I left Oak Villa for London, taking with me her blessing, a well-filled purse, and several foolscap sheets of closely written counsel, adapted to all conceivable exigencies. Webbe had gone the day before to Portsmouth upon business connected with his American prize; but I should find him either at his private lodgings, High Holborn, or on board the *Scout*, which, from the direction of the wind since Monday morning, he had no doubt would reach the Thames before either he or I did.

I arrived in London on Thursday afternoon about five o'clock, and seeing by the shipping news in the papers that the *Scout* had brought up a little below Greenwich, I lost no time in getting on board. My arrival was hailed with great satisfaction by Captain Webbe, as the tide would soon be on the turn, and he was anxious the *Scout* should sail that evening. He was in the cabin taking a parting glass with his son, and chief officer, Mr Robert Dowling.

'Pressing business matters, Mr Linwood,' said Captain Webbe, as he filled me a stiff tumbler, 'prevent me, I am sorry to say, from accompanying you to Jersey. I shall, however, manage to meet you there before many days are past.'

'That is, I suppose,' remarked Dowling with something of a glum look and tone—'that is, I suppose, if the *Scout* don't happen to bring up in a French port instead of Jersey.'

'Is there any fear of that?' I hastily exclaimed, glancing as I spoke at the pale, handsome face of young Webbe, upon which fear, if I did not misjudge him, was strongly marked.

'I don't know about "fear,"' gruffly replied Dowling; 'but the fact is'——

'Of course you don't know about "fear,"' interrupted

Captain Webbe; 'nobody supposed you did. *Le Renard*, a French war-brig,' added the captain, 'whose commander is supposed to have a spite against us for balking him some time since of a valuable booty, sighted the *Scout*, it seems, as she came up Channel, and Dowling fancies she may overhaul us on our way to Jersey. Not at all likely; and if she attempts to do so, the *Scout* can shew a fine pair of heels'——

'Heels be ——!' broke in Dowling. 'Don't fancy, captain, that because you won't be on board, we shall'——

'*Chut—chut!* Clap a stopper upon that foolish gab—do,' again interrupted Webbe. 'Let 's on deck,' he added; 'it 's time I were on shore, and you off.'

A shore-boat was alongside, into which Webbe presently jumped; the capstan was manned, and sent round with a stamp and go; the anchor was brought home, and in less than five minutes, I should suppose, after we left the cabin, the *Scout* was dropping down the river, helped with a light air from the northward.

By dawn the next day we were off Margate, and the wind freshening, the *Scout* made swift progress. The day was clear and bright—a wintry brightness—and it seemed that we were to have a pleasant, uneventful run. Whether from the effect of the sea-breeze, or the non-appearance of *Le Renard*, Harry Webbe's fine, if somewhat feminine features had assumed a rosier, healthier hue; and his conversation shewed him to be a well-informed young man.

As the day declined, the sky became overcast; the wind rose and blew in fitful gusts, sometimes of great violence, though of brief duration; and I heard Dowling consult Withers, the officer next in authority, as to whether it might be advisable to bear up for Guernsey. It was, however, decided that the *Scout* should hold on her direct course, passing between the French coast and the islands of Alderney and Sercq. Cherbourg was passed; the race of Alderney was speedily run through; by the time evening closed in, we were beginning to slip past Sercq; and Mr Dowling's apprehension of meeting with *Le Renard* was passing away, when the look-out on the foretop sung out: 'Sail, ho!'

'Where away?' queried Dowling, snatching up his glass, and hastening forward.

'Right ahead!' was the reply; and sure enough a large gun-brig—six fierce teeth a side—hitherto concealed from us by Sercq—was standing directly across the *Scout's* course.

'*Le Renard!* by all that 's lucky!' exclaimed Dowling, as he closed his glass with a snap. 'Turn all the hands up, Withers,' he added, with stern promptness. 'There 's a hot supper, quite enough for every mother 's son of them, just ready, so they had better look alive, or they 'll not have time to ask a blessing before falling-to.'

The tap of the drum, as in a man-of-war, beat to quarters, the men tumbled up the hatchways, and after one quite sufficient glance at the stranger, addressed themselves with a will to clear the *Scout* for action.

'Is a combat inevitable?' I asked, addressing Mr Dowling.

'Why, no, young man,' he replied; 'we are not *obliged* to fight, though, as it happens, we can't run. We might knock under at once—haul down the jack flying at the fore, and be carried off comfortable and quiet as Quakers to Cherbourg. But the "Scouts" not being Quakers, it 's my candid opinion, since you ask me for it, that if you, in an hour or less from this, ain't gone to glory, or upon the road to it, you 'll be uncommon lucky; and besides that, will have something to talk of for the rest of your natural life. Luff!' he roared through his trumpet to the men at the wheel. 'Bring her nose dead to windward. We must lie-to, or, by jingo, the dance will begin before our music is ready.'

THE ATLANTIC TELEGRAPH-CABLE AT WORK.

When the Atlantic telegraph-cable is once securely lodged on its shelf at the bottom of the sea, messages will be transmitted through it from shore to shore of the great oceanic basin, by causing a current of electricity to flow from one end to the other of the included copper strand, and then to produce certain observable electrical effects upon its arrival. A surprising amount of ingenuity and skill has been expended upon the preparation of the apparatus by which this result will be obtained.*

The primary source of the electrical power which will be employed in this service—the fount whence the stream of electrical telegraphy will issue—is a voltaic battery of singular excellence and gigantic power. There are first ten large cells of gutta-percha, strengthened outside by a wooden casing, and filled inside by a mixture of sulphuric acid and water. Into each of these cells project a number of *laminæ* or leaves. The laminæ are composed of platinum-covered silver and mercury-amalgamated zinc alternately; but all the zinc leaves are connected together beneath by a long metallic bar; and all the silver leaves are connected together in a similar way by another bar above. Thus, all the silver element acts as one continuous plate, and all the zinc element does the same. Each metal exposes in one cell of the battery 2000 square inches of surface to be operated upon by the acid. The battery is thus composed, in electrical language, of ten pair of voltaic plates, each having 2000 square inches of silver, and 2000 square inches of zinc, exposed. The zinc and silver elements of each cell have been arranged in separate laminæ, instead of in one extended plate, because by this management it has been made possible for any portion of the acting plate to be removed for renewal or repair without there being the need to stop the activity of the battery for even a single instant. So long as this process of renewal of the corrodible zinc plate is carried on, the giant battery will maintain itself continuously in unimpaired operation. The battery is the invention of Mr Wildman Whitehouse, and well deserves, after his name and its own unrivalled characteristics, to be called 'The Whitehouse Perpetual Maintenance Battery.'

This Atlantic battery is of exceeding power when its electricity-generating energies are allowed to come into unimpeded play. The *wires* by which the contacts are made between its poles, are broad fourfold straps of sheet-copper, and will ultimately be twisted ropes of copper. When contact is made and broken between these straps, flashes of mimic lightning play between them with brisk crackling snaps. If one is pressed upon some iron tool, while the other is drawn firmly down a sharp ridge or edge of the metal, the edge is smoothly cut away, just as if a file had been powerfully drawn three or four times over the angle. If the two straps are pressed down upon the end of a pair of pliers, or upon a thick iron screw, half an inch of either being included between the ends of the copper straps, the included iron becomes red-hot, and begins to burn with the emission of a shower of sparks in five seconds. The *quantity* of electricity generated by the plates of this large battery produces this powerful heating effect when it is thrown upon a small mass of such an excellent transmitter as iron is.

* *The Atlantic Telegraph. A History of Preliminary Experimental Proceedings, and a Descriptive Account of the Present State and Prospects of the Undertaking.* Published by order of the Directors. Jarrold and Sons.

Quantity and *intensity*, or motor energy, in electrical matters are, however, by no means identical things. Although the current set going by this battery is powerful enough to produce the heating effect described when it is thrown upon a substance not offering much resistance to its passage, it is altogether unable to force a path through any body that does offer any considerable degree of resistance. If the frame of a living human being, for instance, be made to assume the place of the screw, by one of the polar copper straps being taken in each hand, previously moistened, not enough of the current passes through the arms and chest even to produce a thrill when contact is made and broken. The electrical current that burns up the iron screw like paper, cannot force its way through four or five feet of flesh and blood. Yet a real lightning flash which had not a hundredth part of the battery-produced current in it, so far as *quantity* is concerned, would penetrate by virtue of its superior *intensity* through that flesh and blood in the fraction of a moment, and reduce them to lifeless ashes. The great heating power of the Atlantic battery is inconvenient in one sense, on account of the transmission of the current having necessarily to be made through a make and break key of metal. The electrical current eats up portions of the metal at each passage with a bright spark and a loud snap, although the key is composed of thick brass springs, and an iron angle, almost a foot long; and so threatens to be continually deranging the mechanism of the commutator by its devouring propensities. This spark-difficulty has, however, nearly disappeared in the hands of the cunning Prospero who wields the rod of electrical magic. Mr Whitehouse now leaves a small curl of fine platinum wire constantly in circuit between the two poles of the voracious monster—the platinum is too tough a morsel to be disposed of; it cannot be eaten up like iron. But it would be kept at an intensely red or white heat, if this were not prevented by further contrivance. The curl of platinum is kept in a vessel of water, and the heat goes to make the water boil, instead of to make the wire red-hot. A wreath of steam is continually issuing from the hissing liquid. When this 'perpetual steaming apparatus' of Mr Whitehouse is at work, as an appendage to the 'perpetual maintenance battery,' no spark appears on making and breaking the circuit by the key. There is a perpetual slight electrical leak going on through the platinum wire, which in no way interferes practically with the full stream through the copper straps, when the complete contact is made. The leak, *then*, merely serves to absorb into itself the redundant and mischievous spark, and so protects the mechanism of the key from harm. The ten-celled battery employed at each terminal station of the Atlantic telegraph line, will be sustained in steady activity at a cost, for consumption of acid and zinc, of about one shilling per hour.

The electrical current of superabundant quantity which is generated in this perpetual maintenance battery of 20,000 square inches of excited surface, is not, however, the agent which will actually traverse the wide ocean. It has been found upon experimental trial that voltaic electricity is at the best but a lazy and sluggish traveller. On this account, the voltaic current is simply employed to generate a fresh force near home. It is strictly but a *generating* current. It is thrown upon a new piece of ingenious apparatus, consisting of coils of silk-covered copper wire, wound round a long bar of soft iron. There is about a mile and a half of the wire, and this wire is a continuation of the metallic plates of the battery. The current produced in the battery courses round and round through the coil, and so engirdles the soft iron bar many times in succession. But the coursing current makes the iron bar a magnet for the time, and a very powerful one too, on account of the multiplying turns of the long coil. Within the wire coil, and also surrounding the iron bar, another coil of much finer silk-covered wire is rolled. This wire is many miles long, and after being wound almost a countless number of times round the bar, it goes off into the strand of the Atlantic cable. It has no metallic communication, indeed, with anything else. Now, as the generating current, issuing from the battery, makes the soft iron bar into a magnet, so the powerful magnet, by mere sympathetic influence, or induction, as it is termed, calls up an independent stream of a new kind of electricity in the second finer coil, and this current flows forth through the cable from one coast to the other of the wide ocean. It is the real *transmission* current; that which goes forth ready girded and bound for the arduous journey. The instrument which receives the battery current is thus properly a double-induction coil. Electricity induces magnetism, and magnetism induces electricity, which differs in character from the primary generating influence in the fact that it is of inferior *quantity*, but of very much higher *capacity for speed*. This magnet-induced electricity comes forth from its coil as a thoroughly equipped fleet messenger, prepared for the effort of leaping across the Atlantic in the fraction of a second of time. In practice, there are two large coil-magnets, each five feet long, placed side by side, because under this arrangement each magnet proves to be a support and a helper to its companion and neighbour. Each, by the mere influence of propinquity, makes the other stronger in its magnetic energy, and thus enables it to induce so much the more vigorous transmission current in the investing coil.

But it is not even the transmission current which will ultimately effect the telegraphic signals. When this current has made its way across the Atlantic, it will naturally be weak, and, in a measure, exhausted by so long a journey; consequently, instead of being set to hard work in this weary state, it will be received in a nursery or infirmary, and have its worn-out vigour recruited and renewed. The transmission current will operate upon a receiving instrument of great ingenuity. The continuation of the conducting strand of the cable will, on the other side of the Atlantic, be curled into a coil, and this coil will surround a horseshoe-shaped bar of soft iron. The current, when flowing through the coil, will make the iron bar into a temporary magnet; and the poles of this temporary magnet will be reversed according as it is a current from the positive or negative pole of the transmission apparatus that flows through the coil. Between the extremities of the temporary magnet there will be a small permanent magnet traversing on a pivot, so that its north pole may be attracted to, or repelled by, a corresponding pole of the temporary magnet. In this way, the permanent traversing magnet will jerk to the right or to the left, accordingly as the giant voltaic battery on the other side of the ocean is made to send a positive or a negative transmission current through the cable. The weakened transmission current will, notwithstanding its own debility, render these magnetic movements comparatively brisk and strong, because it will course many times round the iron bar in its coil, and each time repeat the same influence and call up the same addition of magnetic energy in the iron bar. It will be the old trick of twenty men on the stage making an army a thousand strong, by marching round and round, behind and before the scene. There will be but one current, but the iron horseshoe will feel as if there were a myriad, because of the one running round and round. Now, when the permanent magnet traverses one way, it will complete a circuit, and open the electrical flood-gates of a small local voltaic battery near at hand. That fresh battery, its flood-gates being opened, will set to work, and print or

record a signal on paper prepared for the occasion. When the permanent magnet traverses the other way, the circuit will be broken, the flood-gates of the local battery will be closed, and the printing will be stopped. Thus the hand which holds the break-key on the west coast of Ireland, will, by this complication of inductive influence, make the small permanent magnet on the shores of Newfoundland open and close the outlet of the printing-battery stationed there near at hand. When the winch of the break-handle is turned to the left in Ireland, the battery in Newfoundland will print; when the winch is turned to the right, the battery in Newfoundland will be inoperative and still.

The printing-battery performs its work by the agency of a recording instrument, which consists of a ribbon of paper slowly and evenly unrolled from the inside of a hollow cylinder by means of clock-work, and of a sharp style, which indents a series of dots or lines upon the paper as it unrolls, when magnetically directed to do so. When the style is pressed down *for an instant*, as the paper is dragged along beneath, a *dot* is marked; when it is kept down for a little more than an instant, a prolonged trace or *dash* is left. The style itself is held up by a spring when not at work; but beneath the style there is a soft iron bar, which becomes a magnet whenever a current of voltaic electricity is sent from the printing-battery through a coil curled around it. The temporary magnet then draws down the style to make its dot or dash, accordingly as the case may be. When the soft iron bar is an electricity formed magnet, it is stronger than the spring, and pulls down the style upon the paper; when it ceases to be a magnet, the spring comes into play, and lifts the style up, so that the paper traverses beneath it without a mark. The style is held down an instant or longer, accordingly as an instantaneous or a longer voltaic current is passed through the coil surrounding the bar.

The dot-and-dash code of telegraphic communication is an invention of Professor Morse of the United States. It is a very important contrivance, because it enables complete words to be spelled out when there is but a single wire to transmit the signals through. Different arrangements of these two elementary signals can easily be made to symbol all the letters of the alphabet, and the several numerals to boot. Thus, a dot and a dash signify *a*; a dash and three dots, *b*; a dash and dot once repeated, *c*; and so on. The clerks who are engaged in reading these signals, become so expert in their occupation, that they can close their eyes, and tell what the message is that is being telegraphed, merely by the clicking sounds of the style. They get to understand *the speech* as well as *the writing* of their instruments.

It has been already remarked, that one of the most extraordinary circumstances connected with the working of the Atlantic telegraph apparatus, is the very trifling electrical power which proves sufficient to transmit intelligible signals through long extents of the cable. In an experiment made since the first allusion in our Journal to this subject, Mr Whitehouse was working with 1000 miles of the cable, and succeeded in spelling words through this length by a battery consisting only of two minute fragments of zinc and silver, excited *by a single drop of brine* suspended between them. When one drop of water and a fiftieth part of a square inch of zinc can electrically spell out a word through a distance equivalent to half the breadth of the wide Atlantic, there need not be any doubt entertained that the leviathan laminated battery, with its 20,000 square inches of zinc, and many gallons of acidulated water, will be quite equal to the task of doing the same thing through the entire breadth of the ocean-basin. In 1851, Professor Morse said the Atlantic would one day be crossed by a telegraphic cable capable of transmitting electrical messages; in 1857, the prophetic seer, in all human probability, will enjoy the gratification of witnessing the fulfilment of his bold prophecy.

ST VITUS.

'Now, the faith of St Vitus is not the faith of the Church of England, nor, in faith, do I well know what faith it is; but the Ordinary took no objection to it.' These are the words of one of England's best and greatest humorists—of poor Tom Hood. There is not a saint in the calendar whom I like more. This very 15th of June is his especial day. I daresay that in more parts of the world than one a miracle will be performed by the Sicilian saint upon this day. Why not? Did he not, when about to perish in the persecution of Diocletian, in the year 303, just as he bent his head to the sword, pray that all afflicted with the dancing mania, that horrible madness, should be cured if they prayed to him; and did not a voice—from heaven, say pious believers—respond: 'St Vitus, thy prayer is answered.' If all this did not happen, then the Abbot Hildusoinus of St Denys, the Abbot Warinus; the authors of the *Acta Sanct. Junii*; of the *Annales Ecclesiastic*, are all lying—under great mistakes. Is not St Vitus the patron saint of Bohemia? Has he not, for certain, two bodies—one in the cathedral of Prague, and the other at Parma; not to mention two second-best bodies at St Denys and Cervey, as above?

But of this humour of dancing, which St Vitus undertook to cure—what of that, my masters? Humanity, poor thing, has been visited with various mani furors—tulipomania, South-sea mania, railway mania, and hundreds more. By these it tried to make money; but the dancing mania is the strangest, simplest, most unmoney-making mania ever heard of. 'We read in Spondanus,' says Waddington, the church historian, 'that in the year 1374, there arose in Belgium a sect of dancers, who paraded the streets, entered houses and churches half naked, crowned with garlands, and dancing and singing, uttering unknown names, falling senseless on the ground, and exhibiting other marks of demoniacal agitation.'

Peter de Herentals—an old gentleman with whom I have a very passing acquaintance—tells us one of the words—a frisky word—that they shouted out; perhaps our adjective is derived from it.

'*Frisch friskes* cum gaudio clamat uterque sexus, cunctus manutergio et baculo connexus.' Shouting thus, these poor fellows and lasses danced everywhere. They first danced it at Aix-la-chapelle, then at Liege, at Utrecht, at Limoges, through Tongres, at Limburg, then on to Cologne and Metz. Jumping, stamping, pirouetting; scuffle, shuffle, in and out and down the middle; join hands, gavotte, chassez forward, and set to partners—a polka, a polonaise, a Highland fling, a gallopade and a fandango. 'Are you out of breath, my lady?—nay, I trow not.' A saraband, a minuet de la cour, a waltz, and a clog hornpipe. The peasants in their sabots danced the latter featly enough. Their wives danced the bolero, the cacucha, the Tarantula; the spider bit them on purpose, as you shall hear. Hopping, popping, never stopping, bundling, trundling, whirling in and out; merchants, peasants, noble men, and noble ladies, a few priests, who went off in the midst of their prayers to St Vitus; students dancing the college hornpipe; house-wives and nurses, military men and grave magistrates. Chassez, croisez, pousette, and dos-à-dos, balancez, and chaine de dames, on they went; the musicians being tired out, fresh ones were supplied; dancing, ever dancing, the mania spread like a plague. Idle lookers-on were affected, and joined; the very city-guards threw down their halberts, and jigged it with the rest; the judges and barristers bowed gravely, and

began the first germ of a minuet de la cour; the hangman cut his double shuffle; and the jailer, throwing down his keys, joined the prisoner in a hornpipe in fetters!

All this is a matter of history. Peasants left their ploughs, and every one else his or her occupation. Girls and boys ran away from home, and servants and apprentices joined in the wild scene. The spasmodic disease spread like a plague. The patients leaped like deer over stools, tables, and chairs; they danced on without stopping, till dead or cured. 'Felix Platerus tells us of a woman at Basle who danced for a whole month together,' says old Burton. Music they loved, and the magistrates in Germany used to hire musicians, and also sturdy fellows to dance with them. By the year 1418, the dancing-plague had reached Strasbourg, and for many, very many years, periodical attacks of the mania returned again and again. The priests used to pray to St Vitus, and to throw cold water over the dancers; they would also beat them with sticks, and read the Gospel of St John to them. It was not until the sixteenth century, that Paracelsus, a great man, greatly misunderstood, began to explain the causes of this mania, and to lay down certain rules for its cure. Theophrastus Bombast, or, as he called himself, Paracelsus, struck a deadly blow at the miracle-mongers—for which he now suffers in fame—by first denying that the saints had anything to do with the infliction or cure of this mania. 'We will not admit,' says he, 'that the saints have power to inflict disease. We dislike such nonsensical gossip, as is not supported by symptoms, but only by faith, which is a thing not human, whereon the gods themselves set no value;' that is to say, superstition, for it is that kind of faith which the Sieur Theophrastus designates. He then proceeds to classify the St Vitus's dance: First, From imagination (*chorea æstimativa*); second, from sensual desires (*chorea lasciva*); third, from corporeal causes (*chorea naturalis*). His method of cure was, with one exception, eminently sensible and modern: low diet, fasting, solitary confinement, being made to sit in uncomfortable places, till misery and pain cured the laughter and jigging desires, immersion in cold water, and even severe corporeal chastisement.

Paracelsus—and our admiration of him does not blind us to the fact of his being slightly a quack—then enumerates many quintessences and nostrums which are not of the slightest use. Probably these were intended to work on the faith of the patients. Certainly when once the doctor stepped in, and the priest stepped out, St Vitus lost his power; his shrine shewed a decrease of visitors. Howling, hopping women and girls, and whirling artisans, no longer flocked to him upon St John's day, nor did the priest bring forth the holy-water and St John's gospel to banish the plague. The fifteenth and sixteenth century saw the gradual decline of St John's dancers; and in the commencement of the seventeenth, the thirty years' stand-up fight between the Protestantism of the north and the superstition of the ultramontanists swept over Europe like a purifying fire, and the belief in domestic house-plague devils, and especially the devils whom St Vitus banished, died out and lost its power.

Protestant Germany being saved, there yet remained Italy and Spain for M. le Diable to dance about in. He had already placed himself in communication with the good people thereof; but, determined to go to work in an original way this time, he dismissed St Vitus and his agency, and took up with a little spider called the Tarantula.

Have you ever seen Señora Perea Nena dance the Tarantella? Have you ever been in sunny Spain?—I use the adjective out of deference to everybody else who has used it. Have you ever seen the peasants there, or the Roumani, the gipsies, twirl themselves in a fantastic way, shaking their legs as if bitten, beginning slowly, but increasing wonderfully, till, after a maddening saltation, they fall exhausted? If so, you have seen the last successor of St Vitus, the illegitimate imitator of the devil-spider, the suggester of that Rabelesian Rhapsody of Hood which I quoted in the commencement of this paper.

But lo! shall I write upon an insect and not quote Linnæus? Has that famous naturalist nothing to say about the spider? Does he not give us the habitat of the Aranea Tarantula? Yes doth he; he tells us that it is found in Austral Europe, in Apulia, Barbaria, Tauria, the deserts of Southern Russia, in Astracan, and in Persia. It was formerly believed, says he, to excite a desire of dancing which could only be cured by music; but that its bite was seldom dangerous; that its eyes are red, its body covered with black concentric rings; and that, excepting in these particulars, it is very much like other spiders.

I do not find that the Tarantula dancers differed much from the St Vitus disciples. When first bitten, if everything related be true, they would appear to have fallen into a state of melancholy, and to have lost possession of their senses. This continued till they heard the Tarantula music; upon which, they sprang up shouting for joy, and danced on without intermission until they sank to the ground exhausted and nearly lifeless. Some men were afflicted in another way. A few glasses of wine will make one man merry and another sad. So with the Tarantula. Some were melancholy mad, and wept and pined away with an unsatisfied longing, an anxious misery, a worn-out morbid craving desire, in which they died. Dancing was, however, the rule—continual dancing, perpetual toe-shaking, limb-quivering, back-breaking exercise. To read the old chronicles, one would believe that throughout the fifteenth and sixteenth century, nothing but one long quadrille prevailed in Italy. Moreover, the dancers abhorred or loved certain colours—red they disliked, or liked, with a mad-bull fury—and so were gay or sombre as the case might be.

A certain Capuchin friar of Tarentum jigged it so wonderfully, pirouetting, and setting to corners, flinging, twisting, making cheeses, and hornpiping like any dervish, that Cardinal Cajetano, who half-suspected him to be a humbug, proceeded to the monastery to witness the performance. Of course, the visit ended as all such visits do end. Going out for wool, we weak mortals usually get shorn. Enthusiasm would cease to be enthusiasm were it not catching. The dancing Capuchin danced it finely—balanced himself upon one leg like Cerito, shook the other like Elsler, and then performed certain mad pranks as gracefully as old John Reeve, dressed as Cupid, dancing upon a theatrical sunflower. When he saw his spiritual prince clothed in purple, he made a dash at him; he disregarded the music of the Tarantella, and sighed only for the cardinal's cape. He swooned upon being driven away, and the piteous cardinal gave up the cape, whereon the friar, throwing it over his shoulders, danced as if possessed of a love-frenzy, and Cajetano went away a firm believer in Tarantism.

These spider-dancing people liked water, and had an irrepressible desire for the sea. Some old songs yet remain, expressing their love for the deep, the vast, the ever blue, the deep, deep sea:

> Allu mari mi portati
> Le soleti che mi sanati
> Allu mari, alla via:
> Allu mari, allu mari:
> Mentre campo, l'aggio amari.

But, after all, the only thing to cure them was the Tarantella music. Villages sometimes provided the musicians, and more than one benevolent lady is mentioned who spent her whole time in visiting the sick, and her whole fortune in providing music for the

dancers. Some of the favourite tunes are yet preserved, to which Tarantula patients, from the boy of eight to the old gentleman of ninety-four, performed their saltatory extravagances. It was in its greatest force in the seventeenth century; towards the end thereof, it died off.

Of course, Tarantism, as a real disease, has been denied *in toto*. Certain it is that a spider might bite you or me, good madam or sir, and we should not go off into the exercises *affore namea*. We wait till bitten by an advertisement of dancing taught to adults by Madame Devy. We only exhibit our madness in a private way, or when we go out in obedience to those delightful cards of invitation which tell us that evening-dress is required. Apprentices, milliners, shopmen, and young barristers shew off this infliction in public; and a most ridiculous sight it is. I saw a whole theatre full of people so afflicted the other night, but then it was at a public ball, and I must say I enjoyed the scene. There are gentlemen who say that the spirit which called all those people together, was demoniacal.

Tarantism being dead, it became expedient for the dancing-demon to employ himself otherwise. He did so in France in 1727, when the convulsionaires, praying at the tomb of the Deacon Pâris, were seized with that disease from which they took their name. Their dancing was scarcely so much real pirouetting as that of the St Vitus disciples. Tetanic spasms and convulsions distinguished these attacks; mad wishes of standing upon their heads, the ladies used sacks sewn up at the bottom to cover their feet, and other extravagances, distinguished these fanatics. The numbers increased so much, that about the year 1735, the king ordered that no more miracles should take place at the Deacon's tomb, and the cemetery was closed, whereon the following epigram, slightly profane, you will say:

De par le Roi, défense à Dieu
De faire miracle dans ce lieu.

Pinault, the advocate, who barked like a dog, was a convulsionaire; and Arouet, the father of that arch-sceptic Voltaire, visited a celebrated lady-patient who barked also. The insanity of these poor creatures lasted till the year 1790—not a very proud thing to say of the enlightened eighteenth century.

Eighteenth century, quotha! Have we not disciples of St Vitus now? Do not the Turkish dervishes dance in Cairo and elsewhere? Does not one sect of Jumpers, founded in 1760, exist still, and do not the members of that sect worship heaven by dancing, like David before the Ark? Has not America also its Shakers? Do they not banish marriage as a wicked, wretched institution; but do they not also dance, even dance in their devotions? Do they not also swoon and dance, and faint and throw themselves into convulsions at their camp-meetings? There is little new under the sun. What has been will be again: we may have Corybantes and Bacchantes *redivivæ;* and since people now-a-days give the lie to Galileo, and believe in the wildest miracle-monger, I, for one, would not say but that the neglected shrine of St Vitus may yet have a fresh batch of votaries.

THE CHEMIST.

You have heard, have you not? of 'Philosopher's scales'—
Well, somewhere—'twas neither in England nor Wales—
Lived the cousin of this most remarkable man;
I will tell you about him as well as I can.
He by trade was a chemist; he studied at schools
Where the science was taught by infallible rules;
He knew the prognosis of every condition,
But his forte, beyond doubt, lay in *decomposition*.
Analytical tests he had ready at hand,
Which no compound has ever been known to withstand;
The elements soon were of union bereft,
And nothing but 'simplex materia' was left.
I'm sure you'd have thought it exceedingly droll
To see what a change he produced in the whole;
For bodies that sparkled and glistened before,
When the process was over, were sparkling no more;
And things dark and dingy, when once they were tried,
With the beams of Apollo in brilliancy vied.
Such, indeed, was the charm of this magical fusion,
You'll be tempted to deem it an optic illusion;
But I'll leave you to judge with the facts in your view,
For I'll warrant you'll find them undoubtedly true.
When we went to him first, he was trying with care
A powder he said was exceedingly rare:
'*Humility*' called—as he viewed it again,
'I will test it,' said he, 'with a drop of *Disdain*.
Now, if it is pure, to the bottom 'twill fall,
And you'll see that it will not be altered at all.
But if not, 'twill so violently vapour and fume,
You'll all make a rush to get out of the room.
Stand still, if you please, sir.' No sooner 'twas spoken,
Than with hissing and fizzing the bottle was broken.
Said the chemist: 'I feared 'twould not stand the ordeal;
The counterfeit's commoner far than the real.'
Then, taking it up, nothing more did he say,
But he tore off the label, and threw it away.

Next a pigment was brought him of beautiful red—
Of qualities splendid and grand, it was said;
An antidote sure against tempers too pliant,
And a pigmy it soon would transform to a giant.
'*High Spirit*' 'twas marked; but our friend whispered:
'*No*—
That may be its name in the regions below;
But I strongly suspect you will find, when it's tried,
'Tis much the same thing as in heaven they call *Pride*.
Thus many are often misled by a name.
It differs in form, though in nature the same.
However, we'll test it. When genuine, we find
It combines with the essence of Greatness of Mind.
But if it is spurious, we usually trace
In the salts that it forms, that Self-love is the base.
Look! the Spirit is floating like oil on the top;
And the Essence is sinking, see, drop after drop;
And the colour is gone—the black dust that remains
Is the sublimate Pride—you may see how it stains.
You noticed how quickly the fluid displaced it:
'Tis a virulent poison; you'd better not taste it.'

Next, a substance was brought looking much like an earth,
Which we quickly pronounced of no possible worth;
But our chemist his crucible nicely prepared,
And we watched most intently to see how it fared.
With exquisite caution, he tempered the flame,
As hotter and hotter the furnace became;
Then with one gentle breath, he extinguished the fire,
And we thought that his labours in smoke would expire.
But he searched in the ashes ere yet they were cold,
And produced to our view a residuum of gold!
We looked at each other in silent surprise,
And weighed it before we could credit our eyes;
But it stood all our tests; and with blushing that night,
We owned we were wrong, and the chemist was right;
Yet surely we ne'er were so baffled before,
For covered with dross, who would dream of the ore?

But to tell you of all that came under review,
Your patience would tire, and my memory too;
Still, a fact here and there you shall have in possession,
For those who may study the chemist's profession:
He shewed by experiments certain and sure,
That *zeal* not combining with *love*, was impure.
'By those who are novices yet in the trade,'
He added, 'mistakes are too frequently made;
Thus, 'tis found that an ore looking like Self-denial,
Turns out to be only Self-love, upon trial;
And Frivolity, known as an extract of Mirth,
Often passes for more than its currency worth;

While a substance, less sparkling, but really more bright,
The precipitate, Happiness, many will slight—
Mistaking the first, till astonished they own
The volatile essence in vapour has flown.
Thus you see, my dear friends, that the labour of learning
May all be comprised in the skill of discerning.

'Ah, me!' he exclaimed, as he rose to depart,
'A sorrowful feeling oppresses my heart,
When I think how the good is in error concealed,
When I think of the evil that lies unrevealed;
And often I sigh for that glorious day
Which shall purge all the reprobate silver away;
For though the Refiner, in time of His ire,
The dross shall consume with unquenchable fire,
Yet gathering His jewels with exquisite care,
He will save the least atom of gold that is there.
Hope on; for I see the morn break through the gray—
The shades are departing: all hail to the day,
When fresh from the furnace, untarnished and pure,
Incorruptible Truth shall for ever endure!

GEORGE STEPHENSON.

Towards the close of the last century, there resided at the colliery village of Wylam, some eight miles from Newcastle, an individual named Robert Stephenson, by occupation a fireman to one of the colliery-engines. He and his wife Mabel occupied a part of a small two-storied house—still standing—with unplastered walls, clay-floor, and naked rafters; let out in portions to labourers at the neighbouring pits. Here, according to the 'rechester' in the family Bible, was born, on the 9th of June 1781, Robert Stephenson's second son, George. The family afterwards grew to six in number, and Robert and his wife sometimes found it difficult to make ends meet out of an income of twelve shillings a week, with provisions at war-prices. When all ordinary expenses were paid, there was not much left to devote to clothing, and nothing to the schooling of the children. George's mother was a woman of delicate health and nervous temperament, subject to 'vapours;' and his father was far from being robust. His father's engine-fire was a favourite resort of the boys and girls of the neighbourhood, who used to crowd round it on evenings and half-holidays to listen to some strange adventure of Sinbad or Robinson Crusoe, which he would relate to them; or, better still, to some story of his own invention. He was fond of wandering in the fields, and went bird-nesting in summer-time; and in winter, had a flock of robins which he had tamed sufficiently to come hopping round him, and pick up crumbs at his feet. When George was eight years old, the family removed to Dewley Burn, another hamlet a few miles away. When there was so little coming in, and so many mouths to fill, it was necessary that the children should be set to work at as early an age as possible; so George was set to look after a neighbour's cows, and keep them from straying, at an income of twopence a day. The lad's mind, even at this early age, was not idle; for he made reed-whistles, and clay-engines with hemlock steam-pipes; but not to the exclusion of his bird-nesting propensities. Quitting his cow-minding after a while, he was set to lead horses at the plough, hoe turnips, and do other farm-work at an advanced salary of fourpence a day. But the height of his ambition at that time was to get employment at the colliery, and this he obtained after a while, still with an increase of earnings, first to sixpence, and then to eightpence a day. He was soon removed to another colliery two miles off, and set to drive the gin. This went on for several years, George passing much of his leisure time in taming black-birds and attending to his rabbit-hutch—a great bare-legged laddie, full of fun and tricks. At fourteen years of age, he was appointed assistant-fireman to his father, at a shilling a day; but soon after this came another family removal to Jolly's Close, a few miles further south. The family were all at work by this time, the lads at the pits, and the girls assisting their mother at home; and the united earnings enabled them to live more comfortably than heretofore. When George was fifteen, he obtained a situation as fireman on his own account; and his wages were after a while advanced to twelve shillings a week, an event which he announced to his fellow-workmen with the exclamation: 'Now, I'm a made man for life!'

It was a proud day for father as well as son when George was appointed 'plugman,' and his father fireman to the same engine; although the former was considered the higher post of the two. George now devoted himself to the study of the engine under his care, taking it to pieces, cleaning it, and putting it together again, so that he soon acquired a thorough knowledge of its method of working and construction. He was eighteen years old by this time, earning full workman's wages, but not yet able to read. His duties occupied him twelve hours a day, so that his leisure moments were few. His mind was fully bent on learning to read, for he found that the knowledge he was in want of was unobtainable otherwise. So he began to attend a night-school three evenings a week, to take lessons in reading and spelling; and practised making pothooks, so that by the time he was nineteen he was able to write his own name. After this, he took to arithmetic, in which he soon made great progress, working out his sums while tending his engine, and having fresh ones set him each evening. In the course of time, he was appointed brakesman at the Black Callerton Colliery. His wages were now nearly a pound a week; but not satisfied with this, he turned cobbler, and mended his fellow-workmen's shoes; for he had fallen in love with pretty Fanny Henderson, a servant at a neighbouring farm, and was saving up towards housekeeping. Fanny's shoes, as it happened, wanted mending; so Geordie must try his hand at them. He could hardly bear to part with them after they were mended, but carried them about with him in his pocket for some time, pulling them out now and then, and gazing fondly at them; and doubtless, when obliged to give them up, taking his payment out in kisses. It was here that he saved his first guinea, declaring himself to be a 'rich man' when he put it away. On Saturday afternoons, instead of going off drinking with the other workmen, he always made a point of taking his engine to pieces for the purpose of cleaning it. Although he would never accompany his comrades in their drinking-bouts, he was fond of joining them in the performance of feats of agility, in which, as in most other things, he excelled. He was not without pluck either, as he proved by the thrashing he gave bully Nelson, the terror of the village. His school-education still went on in winter evenings, till he had advanced so far in arithmetic that the master could teach him no more. Still saving up, by degrees he amassed sufficient money to enable him to furnish a small cottage in a very humble manner; and this being done, Fanny and he were married in November 1802. He took his bride home from church on horseback, she being seated on a pillion behind him, with her arms round his waist.

Still theorising—attempting, among other things, to find out perpetual motion—he yet found time to get through much hard practical work. Thus, from mending shoes, he took to making them, and shoe-lasts also; and clock-cleaning was another of his occupations. Thirteen months after marriage, his son Robert was born; a short time after which event, the family

removed to Killingworth, seven miles from Newcastle. At this colliery, which is a very extensive one, George was appointed brakesman. Soon after their arrival, his wife died; a loss which affected George deeply, who cherished her memory through life with the most affectionate reverence. Shortly after, he accepted a temporary engagement in Scotland, from which he returned, after a year's absence, with twenty-eight pounds in his pocket, to find his father blind, helpless, and deeply in debt. Having paid the debts, he removed his parents to a small cottage near his place of work; where the aged couple lived for several years, supported entirely by George. Being drawn to serve in the militia, the remainder of his twenty-eight pounds had to be paid for a substitute to serve in his stead. This last blow brought him to the verge of despair. It seemed as if all his efforts to get forward were to be unsuccessful; and he had fully made up his mind to emigrate to America, but was unable to raise sufficient money to pay for his passage. He still went on experimenting, making models, and obtaining a thorough knowledge of his own engine. A new pit was sunk in the neighbourhood of the one where he worked; but the engine fixed for the purpose of pumping the water out of the shaft was unable to accomplish its duty; and neither the engineer nor any one in the neighbourhood could set it to rights. This went on for twelve months. At length, George, who had thought the matter over for several months, volunteered his services, which were accepted almost in despair; for what could be expected from a poor working-man, where so many educated brains had failed? In four days, however, a thorough cure was effected; and in two days more the pit was free from water.

In the year 1812, George Stephenson was made engine-wright at Killingworth, at a salary of L.100 a year. He was now a good arithmetician, and an eager reader of any scientific works he could lay hands on. During the time he was at Killingworth, he invented several improvements in pit-machinery. Having experienced in his own case the want of a good education while young, he determined that his son should have nothing to complain of on that score. So Robert was sent to a good school at Newcastle; and, as soon as he was old enough, entered as a member of the Literary and Philosophical Institute of that town. The boy's progress justified his father's expectations. Like his father, he was fond of reducing his own theories, and those of other people of which he read, to practice. Wanting something to experiment upon, Robert one day selected his father's pony, and administered to it a severe electric shock, having prepared a kite and copper-wire conductor for the purpose. His father coming out on the instant, shook his whip at him, and called him a mischievous scoundrel, but chuckled inwardly at the lad's ingenuity.

As early as the middle of the seventeenth century, wooden rails had been laid down in various parts of the north, from the collieries to the water-side, to facilitate the transit of minerals between the two points, one horse being able to draw three or four times more over the rails than on an ordinary road. In the course of time, these wooden rails came to be plated with iron, and thus rendered more durable; and rails made entirely of cast iron were gradually introduced in various parts of the country. After a time, various scientific minds were attracted by the idea of constructing a machine to be worked by steam, which should run on these tram-roads, and supersede horses. Many engines of different kinds were built by various parties, some of them being entire failures, others having a partial success. Thus, in 1804, Captain Trevithick was considered to have achieved a great labour when he constructed a locomotive which would drag ten tons of iron after it at the rate of five miles an hour. Practically, however, this engine was a failure, and had to be dismounted in a short time. In 1812, Mr Blenkinsop, of Leeds, constructed an engine which would drag thirty coal-wagons at a speed of about three miles and a quarter an hour. The great peculiarity of this machine was, that the driving-wheel was cogged, and worked into a toothed rail laid on the outside of the ordinary rails. All those who had hitherto turned their attention to the question, had worked on the idea that a heavy engine, constructed with a plain flanged wheel to run on smooth rails, would not be sufficiently adhesive ever to attain any considerable speed; in other words, that the wheels would slip round without biting the rails, and the locomotive come to a dead stand as soon as high-pressure speed was attempted. George Stephenson was the first to do away with this fallacy, which had been a stumbling-block in the way of all his predecessors, and to prove that 'the weight of the engine would of itself give sufficient adhesion for the purposes of traction.' At the Wylam Colliery, two or three engines of different kinds were tried with but indifferent success; and George, who had now bent the whole energy of his powerful mind to the locomotive question, went over frequently to see them work, and to study the principles on which they were built. He turned the subject over and over in his mind, and devoted month after month to patient investigation and preliminary experiments, all tending in one direction. Lord Ravensworth was called a fool by many people when, after listening to George Stephenson's statements, he advanced him sufficient money to construct a locomotive engine in accordance with his plans. There were still many difficulties to contend with; but on the 25th of July 1814, his engine was placed on the tram-road at Killingworth Colliery. It was constructed with smooth wheels to run on an edge-rail, was without springs, and had a water-barrel for a tender. It succeeded in drawing a weight of thirty tons up a considerable gradient at a rate of four miles an hour, and was 'the most successful working-engine that had yet been constructed.' Still, there was little or no saving over the cost of horse-power, neither was the speed greater than that which could be obtained on the old system, and George Stephenson's engine would have turned out little better than a failure, had he not made an opportune discovery which more than doubled the speed hitherto attained, without extra expense. His discovery consisted simply in making use of the waste steam—which had hitherto been allowed to blow itself away—to excite the combustion of the fuel, by adding velocity to the draught from the furnace, and thus create a larger volume of steam for working-purposes. He had scarcely made this discovery before he set to work to build a second locomotive; and, taught by his first experience, his second was constructed in so skilful and superior a manner, that it may in truth be termed the father of all succeeding locomotives, since its great fundamental principles remain in operation to the present day.

Soon after completing his second locomotive, George's attention was drawn to the number of fatal accidents occurring in pits from the explosion of fire-damp; and to the necessity of constructing a lamp which would afford the miners sufficient light to work by, and yet do away with the risk of explosion. He set to work, experimenting in his own way, and risked his life several times in the pit before he was satisfied that he had discovered the true principle on which such a lamp could be constructed. At length he discovered that a lantern, pierced with a number of small tubes at the top and bottom, and otherwise air-tight, might be burned in the foulest air without causing an explosion; and on this principle his lamp, which is in use in Northumberland to the present day, and is called the 'Geordy' lamp, in contradistinction to the 'Davy,' was constructed. It was first put to a practical use

towards the close of the year 1815, the same month that Sir Humphry Davy's discovery was announced to the world; and a long and bitter dispute afterwards arose between the partisans of Davy and those of Stephenson as to the priority of the invention. The grand principle of the Geordy lamp is the same as that of the Davy; the wire-gauze by which the latter is surrounded consisting, in fact, of nothing more than a number of minute tubes, through which explosion of hydrogen gas cannot force a way. A thousand pounds was collected by subscription, and presented to George Stephenson, in a silver tankard, at a public meeting of coal-owners at Newcastle, in token of their high opinion of the value of his invention.

Not satisfied with what he had already effected in the way of engines, George invented several important improvements during the next few years in the working of his locomotive, which our space forbids us to do more than mention. Although his engines were in constant use on the Killingworth Railway for a number of years, yet they excited but little attention, and were scarcely known beyond the immediate neighbourhood. In fact, the great problem at that time, with those who devoted themselves to the matter, was to construct a locomotive which would work on ordinary roads; and the idea of constructing an iron road from one town to another was regarded as something visionary. Mr Edward Pease, of Darlington, had seen for some time the need of opening up a route between the port of Darlington and the vast beds of coal in the Bishop-Auckland valley; and a tram-road between the two points, worked by horses, seemed to him the best mode of communication. Accordingly, the Stockton and Darlington Railway Company was gradually formed; the shares being chiefly taken up by Mr Pease's own relatives and friends, the public being averse to risk their money in such a harebrained project. A bill was laid before parliament, and, after considerable opposition, was passed in the session of 1821. George Stephenson, hearing of the projected railway, made application to Mr Pease with the view of being appointed to superintend the formation of it. It being found necessary to make a fresh survey of the country through which the proposed line was to run, George was intrusted with the duty. In his report thereon he recommended several alterations and deviations from the route proposed, which necessitated an application to parliament for an amended act, in which, at Mr Stephenson's urgent request, a clause was inserted empowering the company to work the line by means of locomotive engines, and to employ them for the conveyance of passengers as well as merchandise, if needful. The act having been obtained, George Stephenson was appointed engineer, at a salary of L.300 a year. The line was opened on the 27th of September 1825, and was worked partly by stationary and locomotive engines, and partly by horses. The first passenger-carriage was an old coach body, mounted on railway wheels; and some years elapsed before regular passenger-trains were established. While the line was in the course of formation, George Stephenson and Mr Pease entered into partnership, and opened a locomotive manufactory at Newcastle—for several years the only factory of the kind in existence—and, though commenced on a very small scale, destined in the course of a short time to swell into gigantic proportions.

The necessity of additional means of transit for goods between Liverpool and Manchester had long been felt, and frequently discussed by those interested in the matter. The Mersey and Irwell canals were at this time the sole means of conveyance between the two towns. The rates were preposterously high; the time taken to perform the journey averaged thirty-six hours; and the means were so inadequate to the necessities of the time, that the Liverpool warehouses were frequently blocked up with cotton, while the mills in Manchester were standing idle for want of it. In the year 1824, the question took a tangible shape: a committee was formed, a prospectus issued, a share-list opened, and George Stephenson was unanimously appointed engineer; though it was still a question whether the projected line should be worked by steam or horse power. Even those most in favour of steam ridiculed the idea of conveying goods and passengers at a greater speed than nine or ten miles an hour; all except Stephenson himself, and he was requested by his own party to keep his 'absurd' views to himself.

We have no space left to detail the incidents connected with the passing of the bill and the formation of the line, for full of interest as they are, they are matters of general railway history. The line was eventually completed, in spite of the opposition of land-owners and canal-owners, and the wild forebodings of Mrs Grundy. The grand difficulty at Chat Moss was triumphantly overcome, through the ingenuity and perseverance of Mr Stephenson, although the greatest engineering authorities of the day had given as their opinions that it would be impossible ever to make a firm road over its treacherous depths. Still the great question, what system of traction should be used on the new line? remained unsettled. Most of the directors were in favour of working by means of stationary engines, placed at certain distances, about a mile and a half apart, along the entire length of the line; and George Stephenson, earnestly as he advocated the superior advantages of the locomotive, found few supporters, even among his best friends. Beset on all sides by twenty discordant schemes, the directors at length offered a prize of L.500 for the best locomotive-engine, the chief conditions being, that it should be able to draw twenty tons after it at a speed of ten miles an hour, and that the engine and tender should not weigh more than six tons. Mr Stephenson and his son immediately set to work, and the product of their united skill was the celebrated *Rocket*. The engines heretofore built by George Stephenson, and at work on various colliery lines, did not, as a rule, average a speed of more than six or seven miles an hour, though they were capable of running nine or ten miles an hour on pressing occasions. The only difficulty in the way of obtaining a greater speed lay in the fact, that steam could not be generated in the boiler fast enough, nor in sufficient volume, to work the machinery with the necessary amount of force. The difficulty was overcome by introducing into the *Rocket* a multi-tubular boiler, an invention claimed by several individuals, but now first worked out to a really practical issue by the Messrs Stephenson. The multi-tubular boiler consists of nothing more than the old cylindrical boiler, pierced through its entire length with a number of small copper tubes, through which the hot air from the furnace passes into the chimney, causing the tubes to present a large heated surface to the water inside the boiler, by which means an almost indefinite quantity of steam may be generated. It is a matter of notoriety that the *Rocket* won the prize, and attained a maximum speed of twenty-nine miles an hour on the opening day. This decided the question; not another word was heard about stationary engines; and the result of that day's trial may now be seen in the vast iron web in which England is entangled from end to end.

We have hitherto followed George Stephenson step by step in his career as fully as our space would allow; but now that we have reached a point in his history from which the future lies broad and pleasant before him, abounding in wealth, fame, and friends innumerable, we must hasten onward with rapid steps.

Within ten years of the day on which the Liverpool and Manchester line was opened, nearly the whole of

the principal towns in England were supplied with railway accommodation, though this was not effected, even after the success of the Liverpool line was a fact patent to all, without much absurd opposition from large landowners, and even from the corporate bodies of several considerable towns. To nearly all the most important of these lines, George Stephenson acted as engineer; thus, in the course of two years alone, 321 miles of railway were constructed under his superintendence, at a cost of about L.11,000,000 sterling. By this time he had taken up his residence at Tapton House, near Chesterfield, where he continued to reside for the remainder of his life, and near to which were some extensive coal-pits, which he had leased in conjunction with some Liverpool gentlemen. From these collieries he supplied London with the first coals that were sent by railway. His fame had now spread abroad, and in the year 1845 he was requested to go to Belgium to make a survey for the proposed Sambre and Meuse Railway. A public banquet was given in his honour at Brussels; he had also an interview with King Leopold, and in the course of a conversation on geology, made use of his hat as a model to illustrate what he was saying. 'I was afraid,' said he to his companion as they left the palace, 'that the king would see the inside of my hat, for it 's a shocking bad one.'

He had been made a knight of the Order of Leopold some years before; and Sir Robert Peel offered him knighthood more than once, but Mr Stephenson would not accept it. A short time after his visit to Belgium, he went to Spain, to make a survey for a proposed line; and having overworked himself, fell ill on the way home; and, though he recovered after a time, was never so strong afterwards. He gradually gave up to his son all matters connected with railways, and settled down into a quiet country gentleman of agricultural tastes. His closing years were chiefly devoted to horticulture and farming; and he revived in his old age many of the tastes of his boyhood. He had special pets among his dogs and horses, and was proud of his superior breed of rabbits. There was scarcely a nest on his estate that he was not acquainted with; and he used to go round from day to day to look at them, and see that they were kept uninjured. The year before his death, he visited Sir Robert Peel at Drayton Manor. Professor Buckland was of the party. One Sunday, as they were returning from church, they observed a train speeding along the valley in the distance.

'Now, Buckland,' said Mr Stephenson, 'I have a poser for you. Can you tell me what is the power that is driving that train?'

'Well,' said the other, 'I suppose it is one of your big engines.'

'But what drives the engine?'

'Oh, very likely a canny Newcastle driver.'

'What do you say to the light of the sun?'

'How can that be?' asked the professor.

'It is nothing else,' said the engineer. 'It is light bottled up in the earth for tens of thousands of years—light, absorbed by plants and vegetables, being necessary for the condensation of carbon during the process of their growth, if it be not carbon in another form; and now, after being buried in the earth for long ages in fields of coal, that latent light is again brought forth and liberated, made to work, as in that locomotive, for great human purposes.'

Thus peacefully sped away the last few years of this true man. He died on the 12th of August 1848, in the sixty-seventh year of his age, and lies buried in Trinity Church, Chesterfield.

These particulars of the life of one who has been appropriately termed the 'Father of Railways,' have been gathered from the excellent memoir by Mr Samuel Smiles, recently published.

HOW TO DEAL WITH THE PLAGUE OF MICE.

A good trap? That soon ceases to be of much effect. Cats? They are a nuisance in themselves, unless where trained as pets. Poison? That is dangerous. Listen a minute, and I will tell you of a plan of a very simple nature, which experience teaches me is efficient. On entering the house the writer now occupies—a rather old one, as it was built in the reign of James II.—the floors and shelves exhibited the usual proofs to eye and nose that they were a haunt of large numbers of mice. It seemed hopeless to trust to the ordinary remedies. Thinking over what else could be done, I bethought me that, if it could be made not worth their while to remain, the mice would be sensible enough to desert the house for better quarters. It was resolved, therefore, to act upon the principle, that prevention is better than cure. The reader must excuse a somewhat minute detail on a domestic subject of no small importance. We chanced to have a thoroughly cleanly and rather reasonable cook at the time, who, though fond enough of her own way in most other things, did me the favour to let me have mine in this affair, and to carry out my plan with the greatest strictness and fidelity. On that very evening, after the last meal at night, every crumb of bread was carefully swept from the table, dresser, and kitchen floor, and the sink was carefully sluiced and cleansed from all culinary débris. The sweepings were thrown, not into the dirt-heap, but into the kitchen fire, so as to insure their perfect destruction. This was done regularly every night; and of course the mice soon found out there was nothing for them to eat, excepting a trifling morsel of cheese in a common trap, by which a few were caught. In about a fortnight, one weakly mouse was caught by the hand; but from that time to the present—about a year and a half—not a trace of a mouse has been visible, though they have been heard running behind the wainscotting in some parts of the house. No trouble has been taken to stop up the mouse-holes, which remain as at first; not a single cat has been known to enter the house, and no dog has been kept. It is evident that what is carelessly left on the floors, &c., of meal-rooms, constitutes the chief support of mice; and if the trouble were taken to deprive them of this, they would soon be so far reduced in numbers as to be rarely seen or heard. Every occupant of a house might, at all events, in this way compel the mice to migrate to his less cleanly and less pains-taking neighbours; and if the custom of removing every particle of food from the floor every evening were established in all houses, as it very easily might be, the propagation of these troublesome little animals would nearly cease in large towns; at all events, those which did exist would confine themselves to their proper habitats, the drains and sewers. An unlooked-for additional benefit, moreover, of a similar kind, was the result of this practice, which may possibly be mentioned on another occasion.

'HIS HORN SHALL BE EXALTED.'

Continuing our ride to Banias, we toiled up steep rocky paths, where we found trees and shrubs very abundant, particularly on grassy table-land. We met people travelling—women on horseback wearing the curious horn, which is fixed on the front of the head, and fastened behind. This *tantur* or horn is made of tin, silver, or gold, according to the rank or wealth of the wearer. Some are a yard long, shaped like a speaking-trumpet. It rises from the forehead, and is fastened at the back of the head by a band. A large veil is thrown over it, and falls down the sides of the head and shoulders. It is usually worn only by married women; but I believe unmarried women also occasionally wear it. There are many references to this horn in the Old Testament. It was sometimes worn by men. Job says: 'I have sewed sackcloth upon my skin, and defiled my horn in the dust,' Job xvi. 15; and David, alluding to the righteous, says, in Psalm cxii. 9: 'His horn shall be exalted with honour.'—*Lady Falkland's Chow-Chow.*

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